

Abstract

APPARATUS FOR PUNCHING, STAMPING AND/OR SHAPING FLAT ELEMENTS

The invention relates to a device for punching, stamping and/or shaping flat elements (29), comprising a base body (1) with a table (18) and support (26) for the flat element (29), and comprising a base plate (17), which supports a punch (24) and which, in order to carry out the working process, can be advanced with the aid of a drive (4,5) toward the support (26) and into a working station (II) whereby bringing the punch (24) into contact with the support (26) and can be moved away therefrom. The aim of the invention is to create a device of the aforementioned type with which a large number of very short and highly precise punching strokes can be executed in succession in order to make punched holes or stampings and, in particular, short stop periods and thus short clock times, in fact, the shortest possible working strokes, can be achieved in the event of fast moving flat elements. To this end, the invention provides that transfer means (9, 7; 35; 43; 46) are coupled between the drive (4,5) and the base plate (17). These transfer means move the base plate (17) essentially without building up any pressure from a position of rest (I), in which the punch (24) is not in contact with the support (26), up to immediately in front of working position (II), then they move the base plate into working position (II) along a short distance while producing a high pressure between the base plate (17) and the flat element (29). During further operation of the drive (4,5) over areas, the base plate (17) is returned to the position of rest (I,II) in the opposite direction of movement essentially without building up any pressure.

direction and moves into the position III in Figure 3. As a result, the base plate 17 was moved upwardly out of the support 26. Two punching operations can be carried out with a to and fro stroke movement of the piston rod 5.

In the second embodiment shown in Figures 4 through 6, mounted rotatably to the holder 16 of the base plate 17 is at least one roller 33 which is guided in such a way as to run against a cam 31 provided on the rotary lever 9.

Upon initial extension of the piston 5, in this second embodiment, similarly to Figure 1, the rotary lever 9 also rotates in the counter-clockwise direction and, by way of the roller 33, moves the base plate 17 downwardly in the direction towards the working position shown in Figure 5, this taking place firstly